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PRELIMINARY

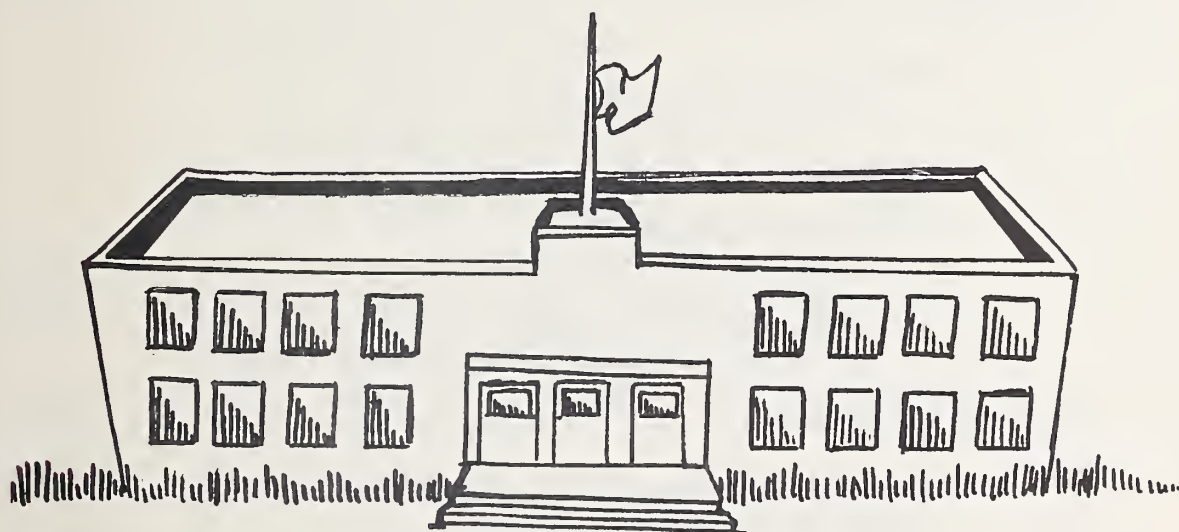
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DRY AND REFRIGERATED



**FOOD STORAGE GUIDE
FOR
SCHOOLS AND SMALL INSTITUTIONS**



U. S. DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service

WASHINGTON 25, D. C.
August 1957

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PREFACE

Agencies that accept U.S.D.A.-donated commodities also accept the responsibility to store and handle them properly. Failure to do so may result in the withholding of further donations of commodities or requiring restitution for commodities that are lost or become spoiled.

This manual has been prepared to guide local agencies such as schools and small institutions in the best methods of handling and storing USDA-donated commodities at the place of utilization.

The information in this manual has been drawn from many sources and includes the latest research available on handling and storing of the various commodities being distributed. This material has been assembled to acquaint school and institution employees with the types of storage facilities and equipment needed for handling and storing USDA-donated commodities. It is recognized that not all schools and institutions have the ideal types of storerooms or handling equipment, however, this should present a challenge to improve existing facilities and plan for adequate food storage facilities in the future.

In using this Guide, consideration should be given to the geographic location of the storage facilities and local situations prevailing in the area, with particular attention given to the climatic conditions.

A separate manual, "Warehouse Storage Guide for USDA-donated Commodities" has been prepared to guide distributing and recipient agencies in the proper method of handling and warehousing USDA-donated commodities which are available to State and local agencies for distribution to schools, institutions, welfare, and other eligible outlets.

In many instances, commodity losses resulting from deterioration and infestation are traceable to inadequate storage facilities, undesirable handling practices, and other conditions which may be corrected by the application of the preventive and control measures outlined in this manual. The guides presented herein are also applicable to the handling and storing of locally purchased foods.

FOOD STORAGE GUIDE FOR SCHOOLS AND SMALL INSTITUTIONS

The term "Storeroom" applies to any facility maintained at the local level such as schools and small institutions where commodities are received at the place of utilization and held in storage until consumed.

All USDA-donated commodities are of top quality, and are purchased on a specific grade under Government inspection. Therefore, careful consideration must be given to the type of storage facilities provided. To insure that commodities offered or requested will have adequate storage facilities to maintain their high quality and nutritive value until consumed, temperature, humidity, ventilation, rodents, and insects need to be controlled throughout the storage period.

The two types of food storage facilities needed are: DRY and REFRIGERATED.

In addition, separate storage facilities need to be provided for nonfood items.

DRY FOOD STORAGE

TYPES:

Common Dry Storage is the type of dry food storage generally used throughout the country. The ideal temperature of 50° F. to 70° F. is maintained by the use of insulation, ventilation, and circulation of air by either natural and/or mechanical devices.

Controlled "Cool" Dry Storage may be desirable in some instances. This can be a separate room or it can be a section of the dry food storage area partitioned off and insulated. A temperature of 45° to 50° F. and relative humidity of 55 to 60 percent is maintained through the use of an air conditioning unit and/or a de-humidifier.

LOCATION:

The dry food storage room should be adjacent to the kitchen area and convenient to the receiving area.

SPACE:

Under normal conditions, allow approximately $\frac{1}{2}$ sq. ft. floor space per meal served daily, based upon two weeks' supply of staples. If the school or institution is part of a large system with a Central Commissary used for the storage of staples and USDA-donated commodities, space requirements will depend on the frequency of deliveries from the central source. If large quantities of staples are bought at one time or if large quantities of USDA-donated commodities are requested, additional space may be needed.

CONSTRUCTION FEATURES: (See Figure 1, Page 6)

Consult State and local authorities having jurisdiction over applicable regulations.

Floors - Floors should be slip-resistant, preferably of terrazo, quarry tile, or concrete with integral hardener. Local regulations should be checked regarding floor drains.

Exterior Walls and Sub-Floors - Walls should be insulated and walls and sub-floors should be vapor-sealed below ground level, rodent- and insect-proof.

Inside Walls & Ceiling - The walls and ceiling should be light in color, smooth, impervious to moisture, easy to wash, and keep in good repair. Glazed tile is the most desirable finish, however, painted plaster or masonry is satisfactory. Plasterboard or wood is not desirable because it is not vermin-proof. Coved bases should be provided at the floor line. Local regulations may also require coved vertical corners.

Doors - Use heavy-duty doors, at least 36 or 40 inches wide. The doors should lock from the outside, and always open from the inside without a key. It might be desirable to have one door to the kitchen area and one door to the receiving area.

Windows - No windows unless required by State and local regulations. If provided, avoid interference with shelving. Security type sash desirable.

Lighting and Wiring - Sufficient light should be provided to insure safe and efficient operations. Wiring should comply with National Electrical Code Requirements (an American Standard) together with local requirements.

TEMPERATURE AND HUMIDITY CONTROLS:

Ventilation - Good ventilation in dry storage is essential to the proper storage of any type of food. Ventilation (by assisting in controlling temperature and humidity) retards growth of various types of bacteria, molds, and diseases affecting plant life.

Good ventilation insures removal of moisture which prevents mustiness and retards the rusting of metal containers.

Natural ventilation, or that obtained by proper construction of the storeroom, permits entrance of fresh cool air through louvered screened vents in the outside wall one foot above floor level and the escape of the warm air through louvered screened vents one foot below ceiling or in the roof.

Mechanical, or forced air ventilation, with intake and/or exhaust fans, keeps fresh air circulating. Generally four air changes per hour will be adequate.

Heating and Cooling - In some geographical areas some kind of mechanical cooling and/or dehumidifying equipment will need to be installed to control the temperature and humidity.

In other geographical areas it will be necessary to have some kind of heating equipment installed to keep certain commodities from freezing.

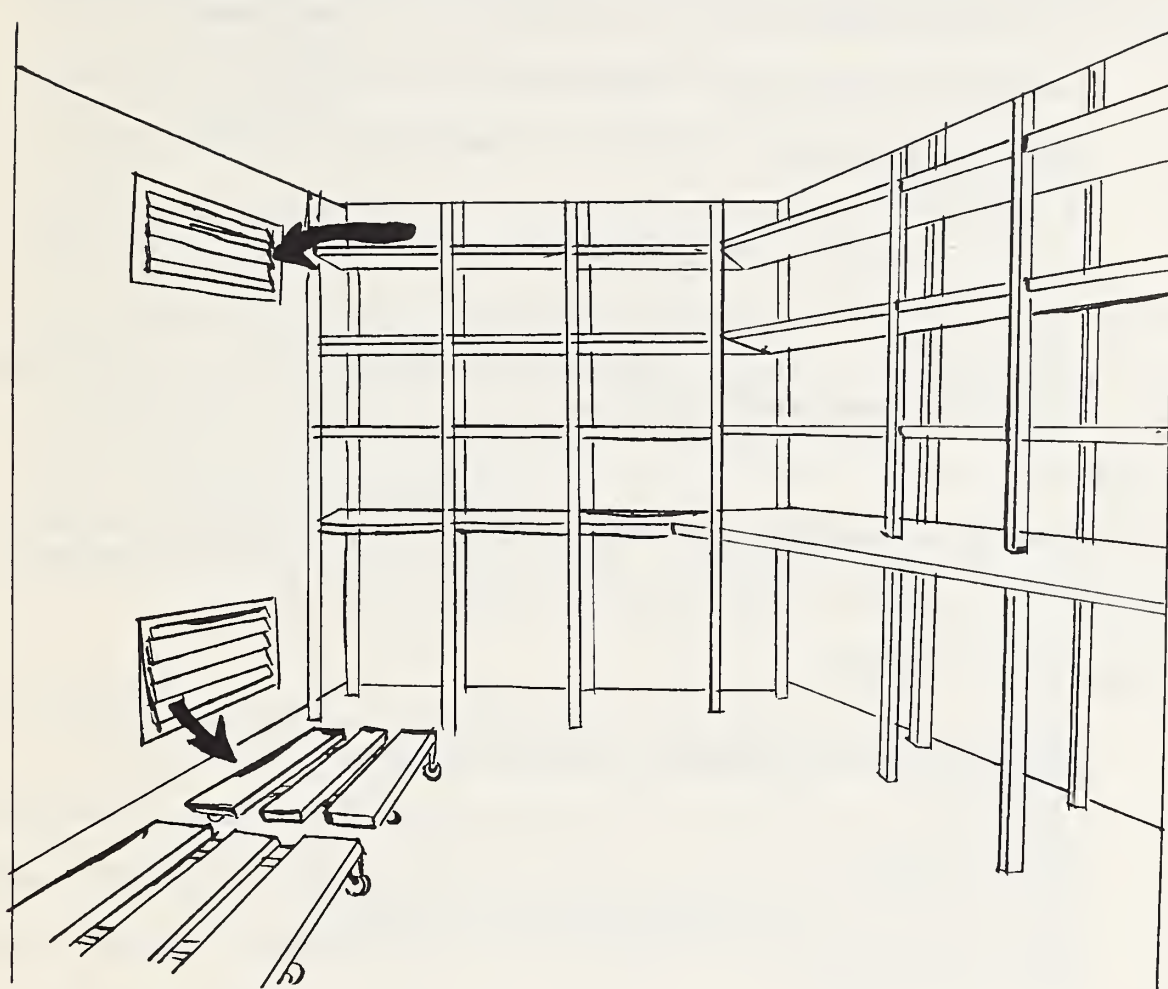
OTHER CONSIDERATIONS:

The storeroom should be kept free of uninsulated pipes, water heaters, refrigeration condensing units or other heat-producing devices.

Safety Features - Power or hand-operated fire extinguishers should be available. They should be inspected regularly and kept in useable condition.

Sanitation - The storeroom facilities should be sanitary and easy to keep clean, rodent-and insect-proof.

Provisions should be made for hand-washing and restroom facilities for all personnel.



Shelves: - Slatted - 2" from wall
 Minimum 16" between shelves
 Three top shelves 18" to 20" wide
 To store broken cases of food and other sundries,
 bottom shelf, 24" to 30" wide, 36" from floor to
 permit storing of foods in covered metal containers
 on dollies, and sacked and cased metal food on
 wooden racks, or racks equipped with casters for
 ease of moving commodities and cleaning floors.

Figure 1. - Construction features of the dry food storage room.

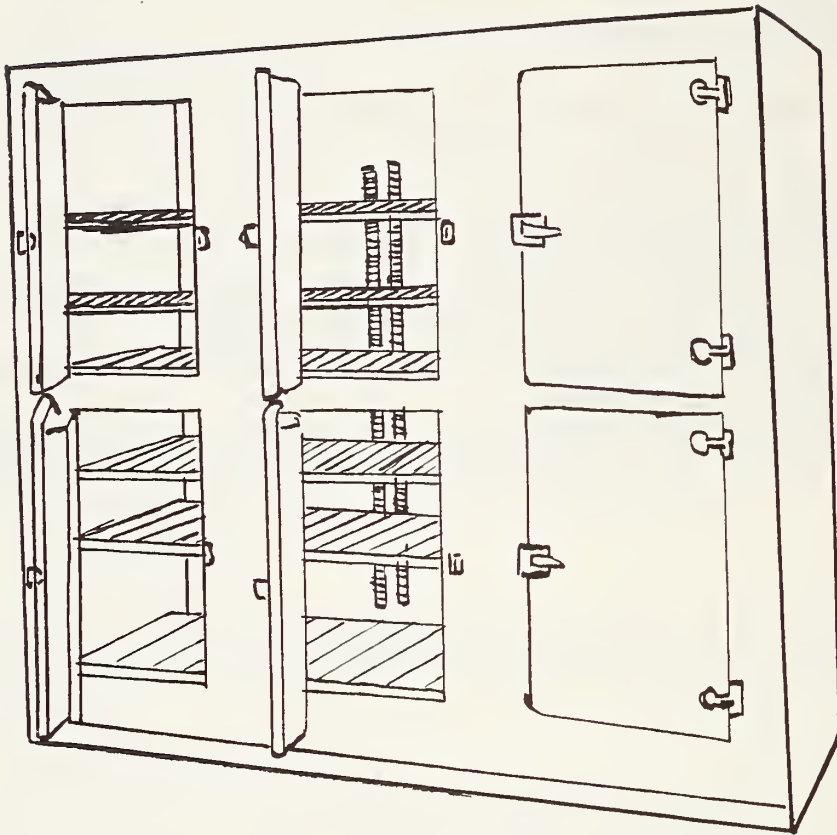


Figure 2. - Institutional type reach-in refrigerator.

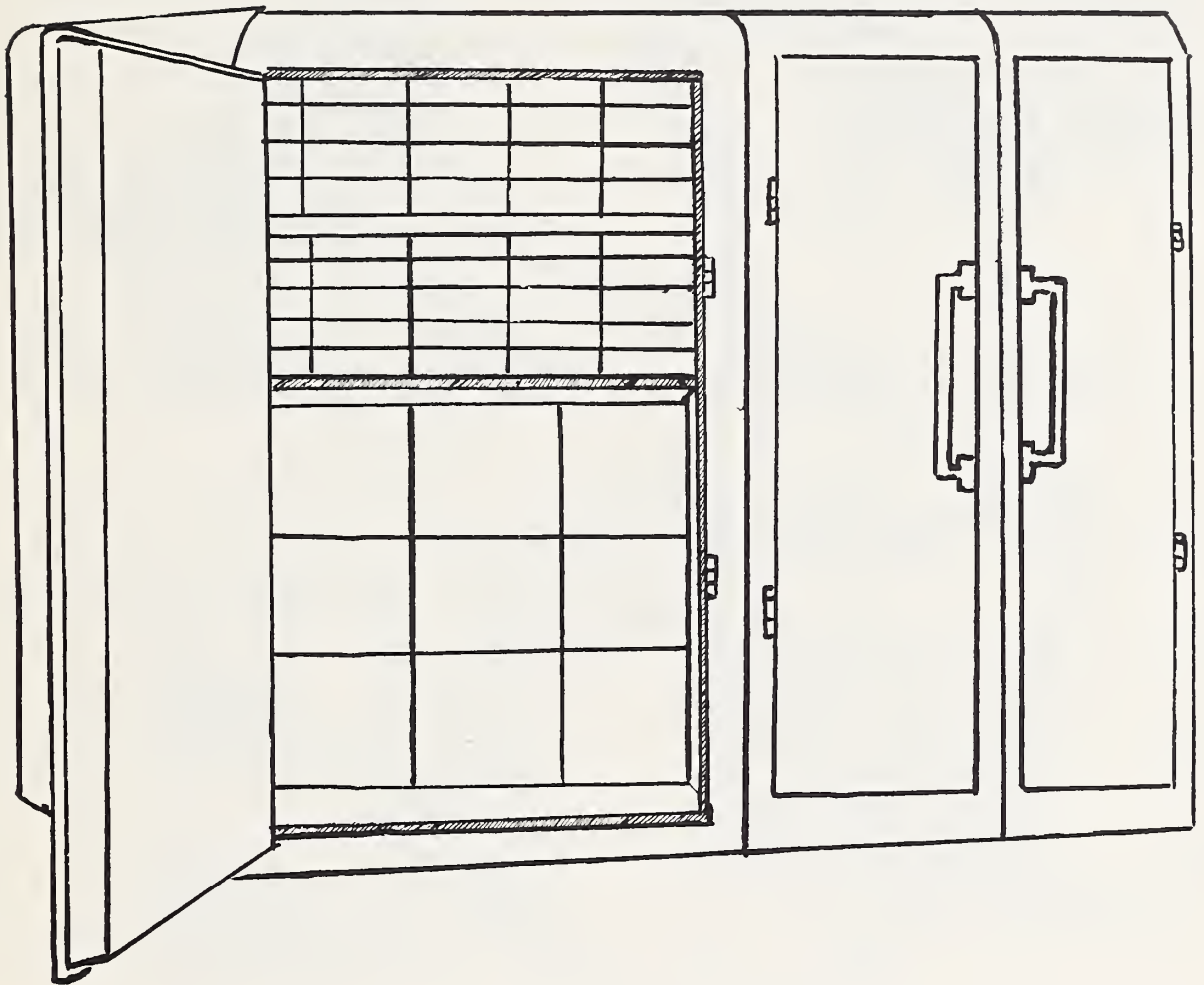


Figure 3. - Institutional type "freezer" or frozen food storage cabinet. (Upright type).

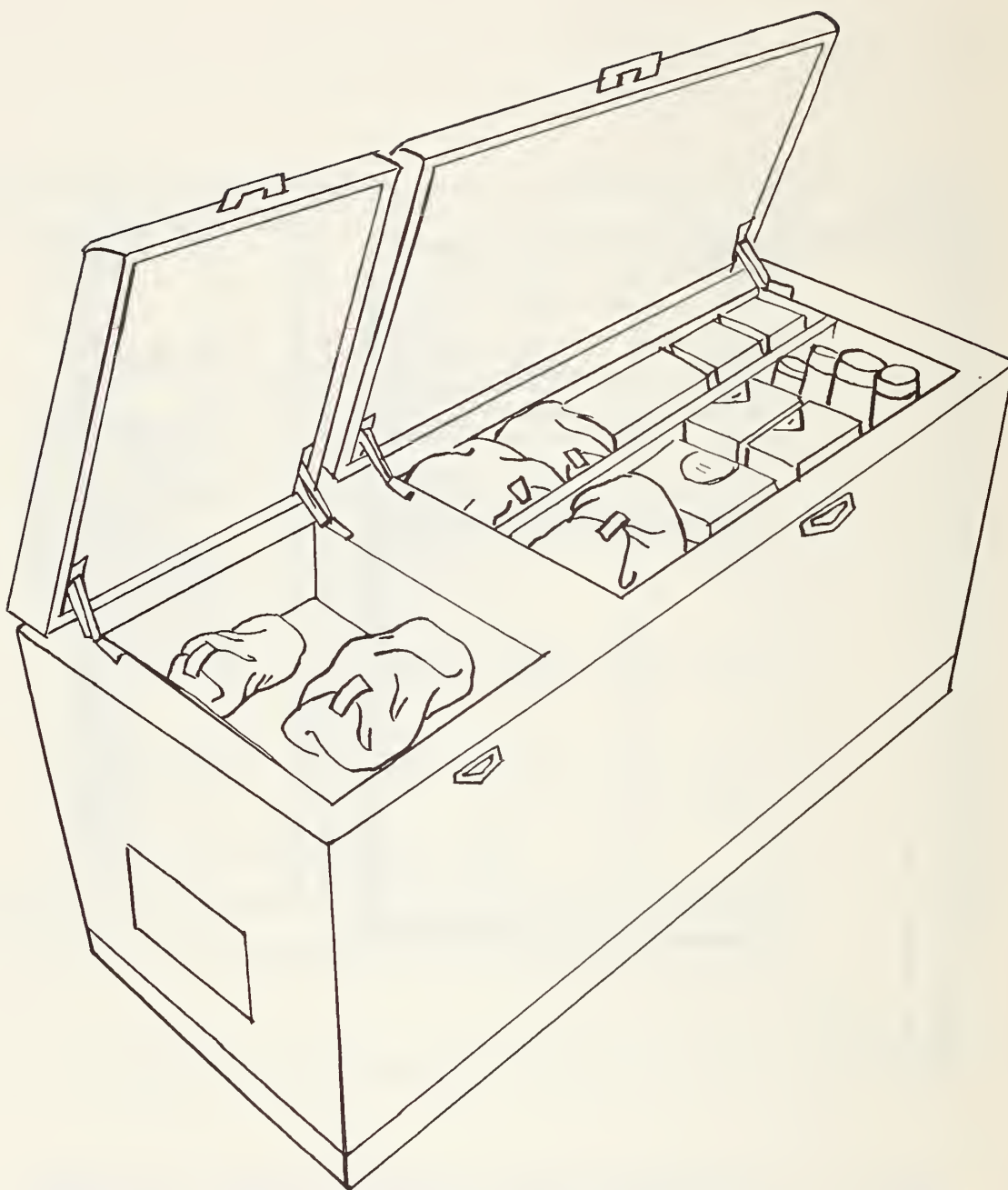
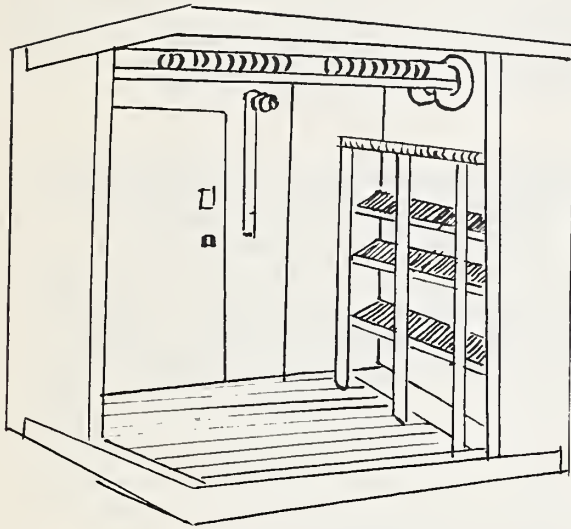
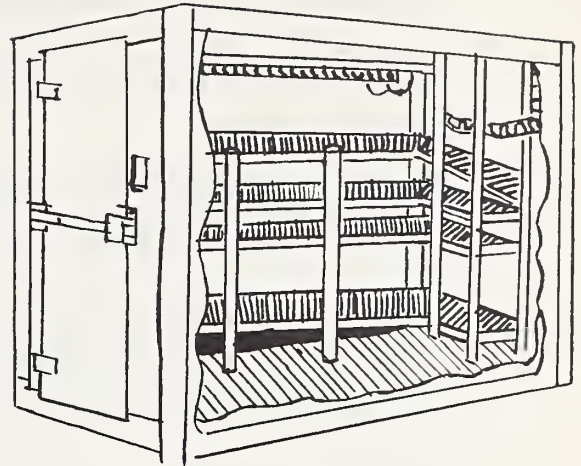


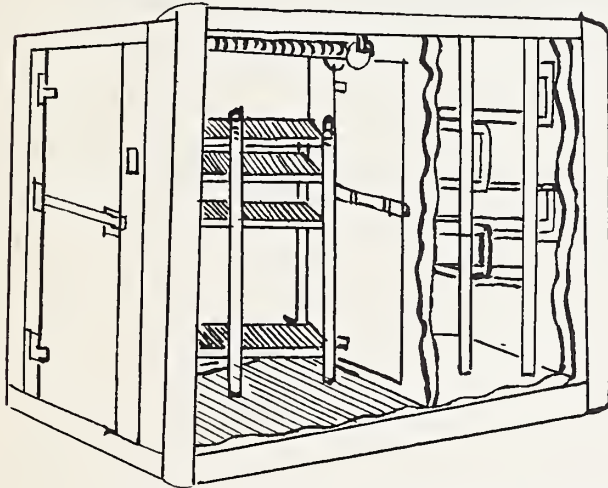
Figure 4. - Institutional type "freezer" or frozen food storage cabinet. (Chest type).



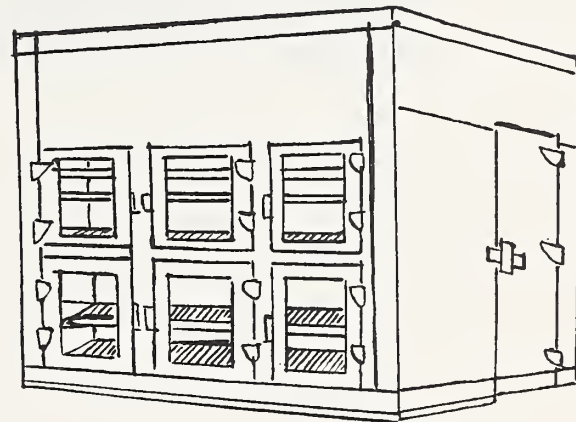
Normal Refrigeration
(32° - 40° F.)



"Freezer" or Frozen Food
(0° F. or Below)



Combination "Refrigerator" (32° - 40° F.)
and "Freezer" (0° F. or Below)



Normal Refrigeration with
Reach-in Doors (32° - 40° F.)

The walk-in floor should be only 1" higher than kitchen floor to facilitate the use of portable shelving, hand trucks, platform trucks, and dollies. (Walk-in refrigerators can be built in as a part of the food storage area or can be purchased from the commercial manufacturer.)

Figure 5. - Walk-in refrigerators.

MANAGEMENT PRACTICES

Inspection of Commodities Upon Arrival

Prior to acceptance, a thorough and careful inspection of all commodities subject to insect infestation should be made before they are stored.

Canned foods should also be given a general inspection to determine if there are any damaged, disfigured, or discolored cases and/or cans which might indicate spoilage or deterioration of the product.

Commodities that are found to be out of condition at time of receipt should be recorded and segregated from other commodity stocks. The distributing agency should be notified and the commodities held pending disposition instructions.

Inventory Controls

Prompt and accurate checking and recording of commodities is essential. Each shipment received should be recorded on a receipt document showing such information as the date, type, and quantity and condition of commodity received.

A physical count of each commodity in storage should be made each month and balanced against the receiving and utilization reports to determine if there is any overage or shortage.

Protection of Commodities from Odors

Commodities which absorb odors should be segregated from those that give off odors. Below is a representative listing of typical food items which give off and/or absorb odors:

Commodity	Give Off Odors	Absorb Odors
Apples, Fresh	Yes	Yes
Butter	No	Yes
Cheese	Yes	Yes
Eggs, Dried	No	Yes
Eggs, Fresh Shell	No	Yes
Milk, Nonfat Dry	No	Yes
Onions	Yes	No
Peaches, Fresh	Yes	No
Potatoes	Yes	No

NOTE: Do not store items such as paint, kerosene, gasoline, oils, naphthaline, soap, wax, polishes, etc. in the same area with commodities. A separate storage room should be provided for such items.

Basic Principles in Storing Commodities (See Figure 6, Page 16, and Figure 7, Page 17)

1. Mark, date, and/or number commodities for easy identification.
2. Store new shipments of commodities in back of the older shipments to facilitate removal of old stock first.
3. Store heavy items on dollies or skids on the floor.
4. Store similar and/or identical commodities together, in groups, i.e.; Canned Commodities; Dried Fruits; Dried Beans; Rice; Flour; Cornmeal.
5. Store commodities subject to insect infestation in separate sections of the storeroom to minimize the possibility of insect infestation spreading from one group of commodities to another group.
6. Store commodities away from storeroom walls, heating plants, hot water or steam pipes, radiators.
7. Store commodities away from direct exposure to sun rays - cover or paint windows; store not closer than 15 to 18 inches to the ceiling or cross beams.
8. Store commodities subject to damage from excessive heat in the coolest part of the storeroom.
9. Store commodities subject to damage by freezing in the warmer parts of the storeroom.
10. Store commodities which absorb odors away from those that give off odors.



Foods need ventilation too. Ventilation is aided by stacking the foods properly and using open containers such as the wire leaf burners for storing certain bulk foods. Off-floor storage on slatted dollies allows circulation of air and prevents absorption of moisture. Current supplies of all foods can be kept clean, moisture-free and readily moved about for sweeping and cleaning the floors and walls, by storing them on slatted dollies and in galvanized cans on dollies as shown in the above picture.

Note: Only food items should be stored in the dry food storage room.

Figure 6. - Storing foods in the dry food storage room.



Figure 7. - Storing foods in the walk-in refrigerator.

KEY POINTS TO CONSIDER IN HANDLING AND STORING FROZEN FOODS

Store at 0° F. or below.

Store in shipping containers to help prevent freezer burn and/or drying out of products.

If foods have thawed, do not refreeze.

If shipping containers have been damaged, the product should be used immediately or repackaged in vapor-moisture-proof containers before storing.

When it is necessary to remove the product from shipping containers to store in smaller lots, the product should be repacked in vapor-moisture-proof containers before storing.

If locally purchased or left-over foods are stored in the freezer, they should be packaged in a moisture-vapor-proof container before storing.

Caution: Under no circumstances should unpackaged foods be put into a freezer!

PACKAGING MATERIALS: There are many different kinds and sizes of freezer or frozen food packaging materials on the market. Some of the better quality, most popular and economical (from the standpoint of using over and over) for School Lunch, institutions, and summer camps are as follows:

- No. 10 tin cans with plastic tops
- 10 and 15 lb. frozen fruit cans
- 1-gallon large mouth glass jars (filled to where the sides begin to taper in)
- Polyethelyene bags. (large and medium size)
- Waxed fiber cardboard boxes. (large and medium size)
- Polyethelyene coated paper, etc.

RECOMMENDED TEMPERATURES FOR STORING
USDA - DONATED COMMODITIES

The recommended temperatures given below for storing USDA - donated commodities are based on research findings for specific foods. For optimum storage conditions, these temperatures should be followed.

COMMODITY	:Dry Storage : :(50° - 70°F):	Refrig. : Storage : (32°- 40°F):	Freezer : Storage : (0°or bel.):	Remarks
<u>Dairy Products</u>	:	:	:	:
Butter	:	:	:	:
Cheese	:	:	:	:
Milk, Nonfat Dry	:	:	:	:
<u>Eggs</u>	:	:	:	:
Shell Eggs	:	:	:	:
Dried Eggs	:	:	:	:
<u>Meat and Meat Products:</u>	:	:	:	:
Beef, Ground	:	:	:	:
Beef & Gravy, Canned:	:	:	:	:
Hams & Shoulders	:	:	:	:
(Fresh)	:	:	:	:
Frozen	:	:	:	:
Cured	:	:	:	:
Hams, Canned	:	:	:	:
Pork Loins	:	:	:	:
Pork Luncheon Meat,	:	:	:	:
Canned	:	:	:	:
Pork & Gravy, Canned:	:	:	:	:
Turkeys, Frozen	:	:	:	:
<u>Fats & Oils</u>	:	:	:	:
Cottonseed Oil	:	:	:	:
Lard	:	:	:	:
Olive Oil	:	:	:	:
Vegetable Shortening:	:	:	:	:
<u>Canned Vegetables</u>	:	:	:	:
Beans, Green	:	:	:	:
Beets	:	:	:	:
Carrots	:	:	:	:
Corn	:	:	:	:
Peas, Green	:	:	:	:
Tomatoes	:	:	:	:
Tomato Juice	:	:	:	:
Tomato Paste	:	:	:	:
Tomato Puree	:	:	:	:

COMMODITY	:Dry Storage : :(50° - 70°F):	:Refrig. : Storage : :(32°- 40°F):	:Freezer : Storage : (0°or bel.):	Remarks
<u>Canned Fruits</u>	:	:	:	:
Apples, Sliced	:	:	:	:
Applesauce	:	:	:	:
Apricots	:	:	:	:
Cherries	:	:	:	:
Cranberry Sauce	:	:	:	:
Figs	:	:	:	:
Grapefruit Sections	:	:	:	:
Grapefruit Juice	:	:	:	:
Orange Juice, Conc.	:	:	:	:
Peaches	:	:	:	:
Purple Plums(Prunes):	:	:	:	:
<u>Fresh Vegetables</u>	:	:	:	:
Beans, Green	:	:	:	:
Beets	:	:	:	:
Cabbage	:	:	:	:
Carrots	:	:	:	:
Potatoes, Irish	:	:	:	:
Potatoes, Sweet	:	:	:	:
Spinach	:	:	:	:
<u>Fresh Fruits</u>	:	:	:	:
Apples	:	:	:	:
Pears	:	:	:	:
Purple Plums	:	:	:	:
Peaches	:	:	:	:
<u>Dried Vegetables</u>	:	:	:	:
Beans	:	:	:	:
Onions	:	:	:	:
<u>Dried Fruits</u>	:	:	:	:
Apples	:	:	:	:
Apricots	:	:	:	:
Figs	:	:	:	:
Peaches	:	:	:	:
Prunes	:	:	:	:
Raisins	:	:	:	:
<u>Cereal Products</u>	:	:	:	:
Cornmeal, Whole	:	:	:	:
Cornmeal, Degermed	:	:	:	:
Flour, All Types	:	:	:	:
Rice	:	:	:	:
<u>Miscellaneous</u>	:	:	:	:
Honey	:	:	:	:
Nuts	:	:	:	:
Peanut Butter	:	:	:	:

EQUIPMENT

THERMOMETERS:

Wherever commodities are stored, a reliable thermometer is essential to make sure that proper temperatures are maintained in order to prevent spoilage and deterioration. Thermometers should be provided for use in both the dry food storage areas and the refrigerated storage areas. Various types of thermometers are shown below:

Wall Thermometer (See Figure 8, Page 24)- Suitable for use in any dry food storage room, or in any type of refrigerated food storage where the temperature does not fall below minus 30° F.

Characteristics:

1. An overall length of at least 12 inches and mounting holes at top and bottom.
2. A temperature range of minus 30° F. to plus 120° F. in 2° - scale divisions.
3. A red-liquid-filled magnifying-glass tube for easy reading.
4. An enameled scale to prevent rusting.
5. Thermometer bulb and tube fully protected by side flanges on the frame to minimize breakage.

Mountings:

Mount in the vicinity of the door where there is less danger of breakage from bumping and at about eye level for easy reading. It should not be mounted on the door or in a recessed pocket.

Refrigerator-freezer Thermometer (See Figure 8, Page 24) - Household size reach-in refrigerators and food freezers, and chest type food freezers can use the hook-on type thermometer. A refrigerator-freezer thermometer of the type shown is designed to hook on wire baskets, shelves, or partitions, or to be placed on any flat surface.

Characteristics:

1. A temperature range of at least minus 40° to plus 60° F. in 2° - scale divisions.
2. A red-liquid-filled magnifying glass tube for easy reading.
3. Rustproof scale and frame.
4. Scale completely encased to protect the thermometer bulb and to slow down changes in temperature indications when the door is opened for readings.

Mountings:

The coldest and warmest areas in a refrigerator vary with the type of refrigerator. To determine where these areas are in a given refrigerator, a thermometer should be placed in different locations, and the door closed for about an hour before taking a reading. When the warmest area is determined, the thermometer should be placed there and the thermostat adjusted, if necessary, to obtain the recommended storage temperature. The warmest area in a freezer should be determined in the same manner.

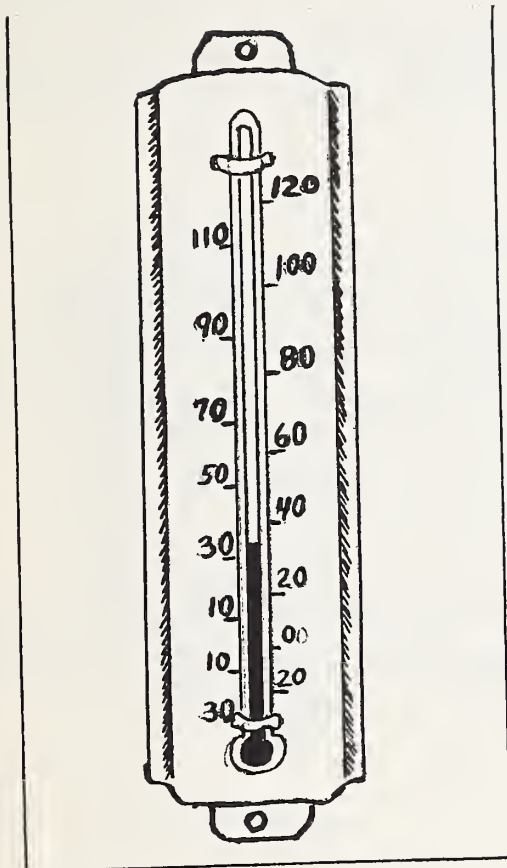
The Dial Thermometer (See Figure 8, Page 24) - Designed to use in connection with Walk-in Refrigerators and Freezers. Permits reading the temperature from the outside of the refrigerated room.

Characteristics:

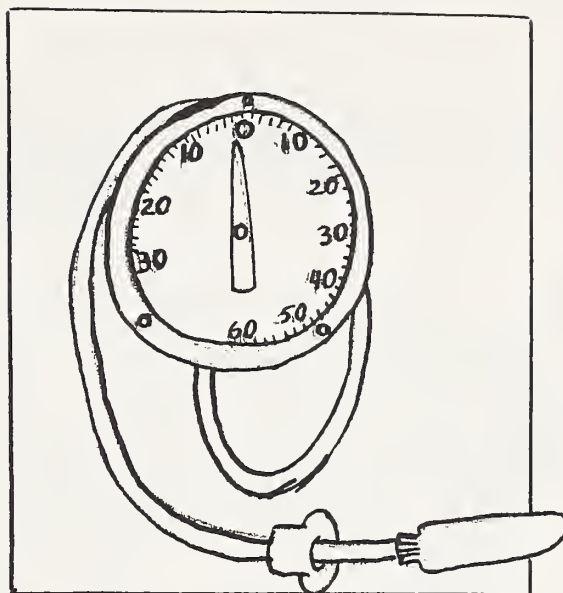
6½ in. base, 5 in. black-metal dial,
large white figures and graduations-
Minus 40° F. to Plus 60° F.

Mountings:

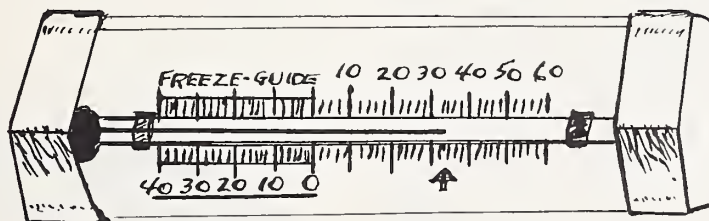
The dial is mounted on outside of the wall, near the door for convenient and easy reading. The temperature sensitivity bulb is mounted inside the refrigerated space, near the center and toward the top.



Wall Thermometer



Dial Thermometer

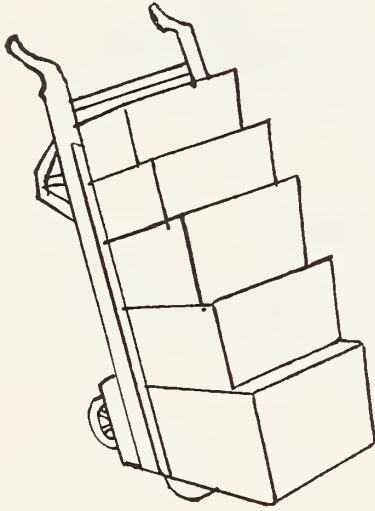


Refrigerator - Freezer Thermometer

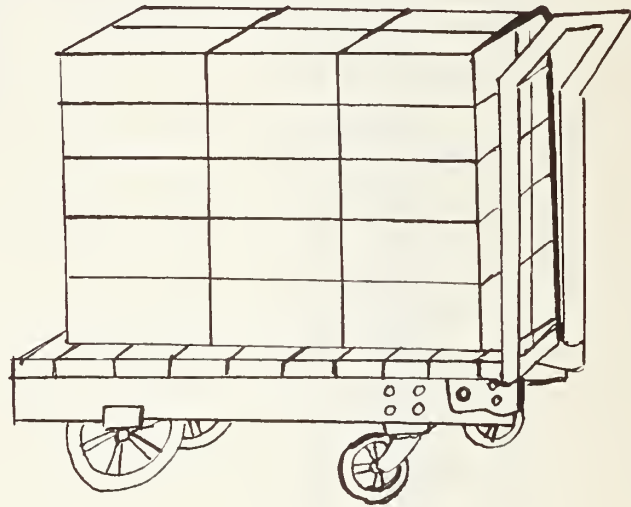
Figure 8. - Thermometers.

HANDLING EQUIPMENT:

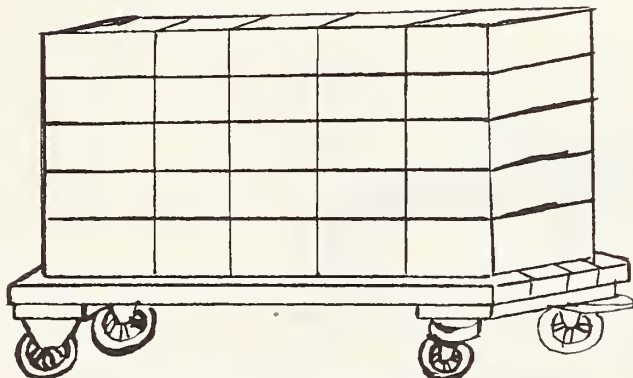
While hand-operated equipment provides the tools for efficient handling and storage of commodities, there are many factors which determine their economy and scope of application, such as the kinds and volume of commodities handled, and the type and size of storeroom in which they are stored.



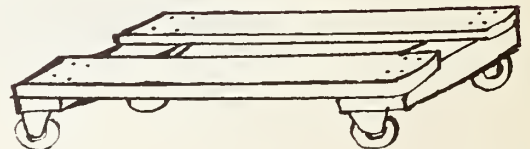
Hand Truck



Platform Truck



Solid Platform Dolly

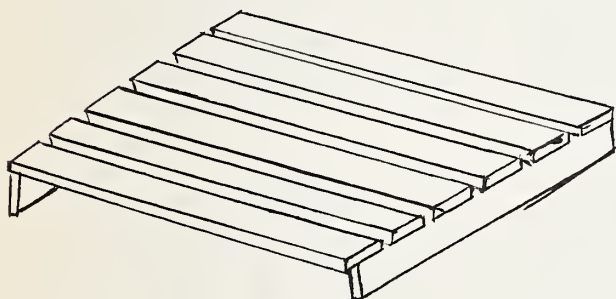


Open Frame Dolly

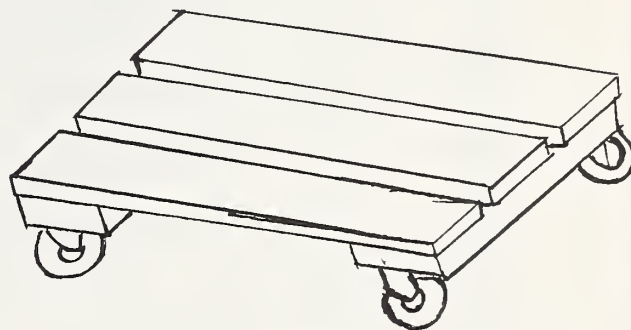
Figure 9. - Hand-operated equipment.

STORING AIDS:

One or more of the following types of storage aids are generally used in storerooms to facilitate the ease of handling and stacking, and to insure good circulation of air around the commodities.



Standard Skid
32" x 40" or 60" up to 10' long.



Heavy Duty Floor Rack on Casters
32" x 40" or 40" x 48" (Made of 2" x 8" planks and 4-6" diameter 2" Face -roller-bearing and ball-bearing swivel casters. Use $\frac{1}{2}$ " or $\frac{3}{4}$ " carriage bolts for putting together.)

Metal Container on Casters
with tight-fitting lids for
storing beans, rice, etc.
and broken lots of bulk foods
such as flour, sugar, cornmeal.

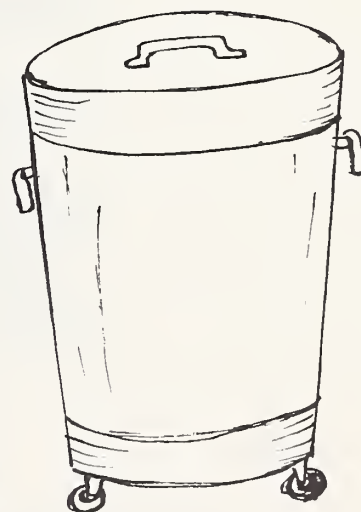
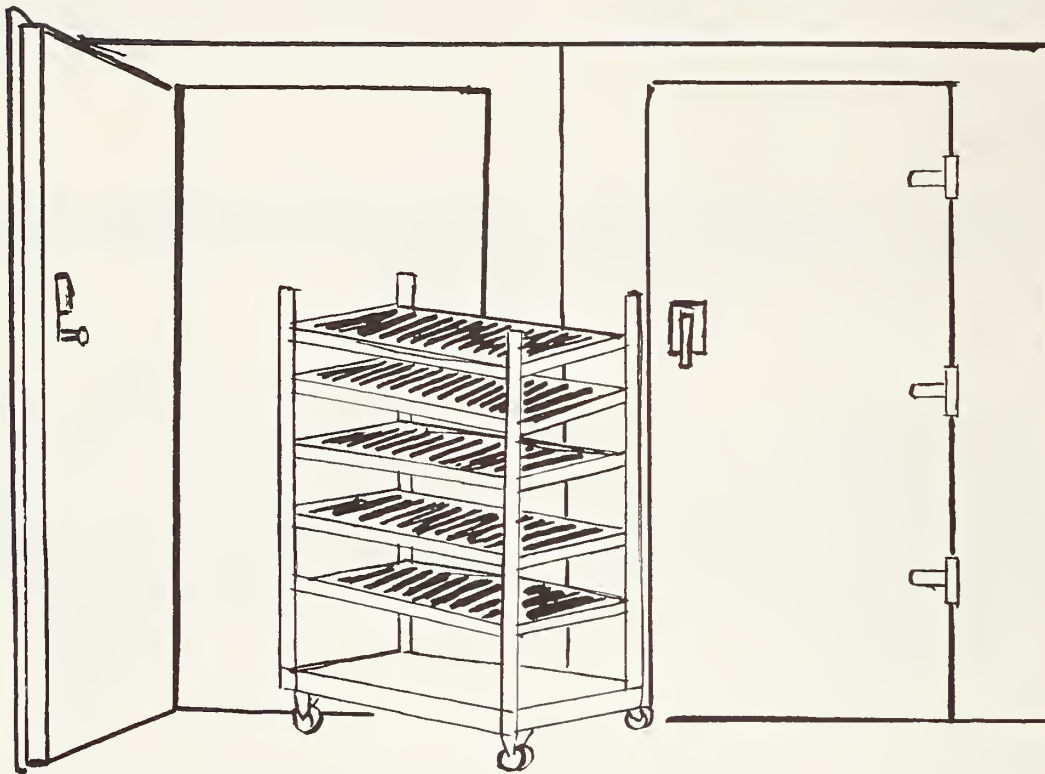
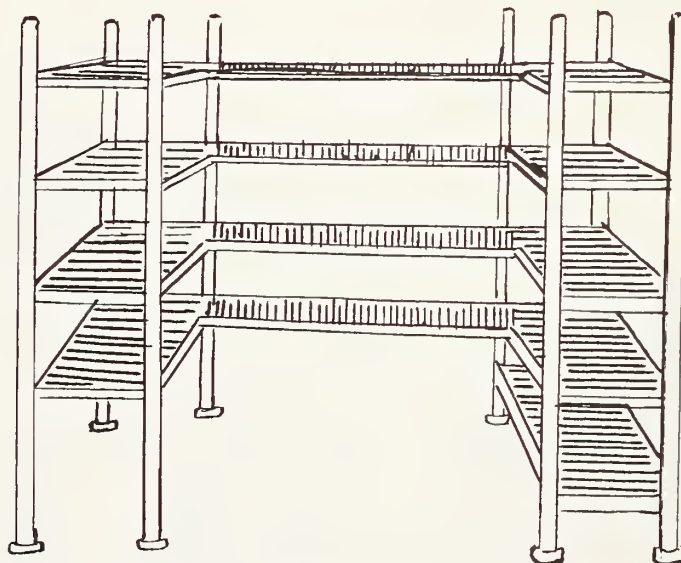


Figure 10. - Storing aids.



Portable Shelving (Stainless Steel or Galvanized)



Portable Shelving (Stainless Steel, Galvanized, or Wood)

Figure 11. - Portable shelving for walk-in refrigerators.

HOUSEKEEPING PRACTICES

Importance of Sanitation and Cleanliness

The application of good housekeeping practices should be applied daily to insure orderliness and cleanliness in all areas of the storeroom. Sanitation and cleanliness are a must in food storage and food handling and cannot be brought about by expenditure of money.

In the food storage, food handling and food preparation field, over 95% of the food poisoning outbreaks are still caused by failure of food handlers to observe and follow good sanitary practices in storing and handling foods before and after preparation for serving, rather than by the lack of good modern storage facilities and equipment. This places the responsibility of keeping U.S.D.A.-donated commodities and locally purchased foods in a good, safe, wholesome, nutritional condition, directly upon the individuals who are responsible for receiving, storing, handling, preparing and serving foods.

The school lunch managers, the institutional food service managers and their helpers should see that any commodities dropped or spilled on the floor are cleaned up immediately, since such particles of food left on the floors invite rodent and insect infestation.

Racks or dollies on which foods are stored should be removed at least once a week to permit thorough cleaning of the floor.

All torn sacks, broken cartons, etc., should be set aside and the contents repackaged. All used containers and sacks should be removed from the storeroom and stored in a separate room until used or disposed of.

Rodent and Insect Infestation, Prevention, and Control

Infestation

Rodents:

Rodents are very destructive and destroy or render unfit for human consumption enormous quantities of food each year. They are not only destructive, but are carriers of and transmitters of such diseases as typhus fever, cholera, tuberculosis, bubonic plague, and rabies.

Sources of Infestation - rodents enter buildings through open doors, windows, and holes in the building around pipes and wires. They frequently burrow under floors and enter through ventilation and drain pipes and are carried in with containers of food.

Types of Rodents - those most commonly found in storerooms are the Norway or brown rat, the roof rat, the meadow mouse, the deer or white-foot mouse, and the house mouse. The brown rat and the house mouse are the most destructive and the brown rat, because of its cunning, is the most difficult to control.

Insects:

Insects also destroy and/or render unfit for human consumption enormous quantities of foods each year. The following commodities are susceptible to insect infestation:

- (1) Whole grain (corn, beans, rice, peas, etc.)
- (2) Grain products (flour, cornmeal, cereal, etc.)
- (3) Dried fruits and vegetables (prunes, raisins, apricots, etc.)

Sources of Infestation - there are many ways in which insect infestation may occur in a storeroom. Insects or insect eggs may be harbored in cracks in floors and walls of storerooms, in freight cars and trucks in which foods are transported, or containers they were shipped in, especially where the containers are reused without proper cleaning or fumigation.

Evidence of Infestation - insect infestation is evidenced by the presence of webbing, beetles, moths, larva, holes in grain, or partly consumed products. Since insects are seldom found on the outside of containers (unless infestation is extremely heavy) it is necessary to look and search inside of bags and boxes. In bagged commodities, insects are most generally found in the creases of the bags, along seams, or in the ears of the bags, and in the dark closed sections of boxes. It may be necessary to examine several bags or boxes of commodities (unless infestation is extremely heavy) before any infestation is noticed.

Types of Insects - A partial list of some of the most common insects that infest commodities while in storage appears below:

	: Whole	: Grain	:Dried Fruits	:
	: Grain	: Products	:and Vegetables:	:
	: (Corn,	: (Flour,	:(Prunes,	:
Insects	: beans,	:cornmeal,	:raisins, apri-	:
	: peas,	:cereals,	:cots, etc.)	:
	: rice,	:etc.)	:	:
	: etc.)	:	:	:
:Saw-tooth Grain Beetle	: X	: X	: X	:
:Confused Flour Beetle	: X	: X	:	:
:Dried Fruit Beetle	:	:	: X	:
:Broad-horned Flour Beetle	: X	: X	:	:
:Cadelle	: X	:	:	:
:Granary Weevil	: X	: X	: X	:
:Bean Weevil	: X	:	:	:
:Mediterranean Flour Moth	: X	: X	:	:
:Indian Meal Moth	: X	: X	: X	:
:Yellow Meal Worm	: X	: X	:	:
:Cockroach	: X	: X	: X	:
:	:	:	:	:
:	:	:	:	:

Prevention and Control

The most successful means of controlling rodents is preventive. All storerooms where commodities are stored should be rat-proofed. Rodents will not remain where there is no food nor shelter; therefore, cleanliness is a very important factor in preventing infestation. The storeroom should be kept clean of trash at all times. All one-half inch or larger openings should be covered or sealed with 1/4 inch galvanized hardware cloth or 26 gauge sheet metal. Fan and ventilation openings should be screened.

Insect infestation may occur even under ideal storeroom conditions; therefore, constant vigilance must be maintained for any sign of infestation. During warm weather inspections for infestation of insects should be made frequently.

Insect infestation of certain commodities such as cornmeal, flour, beans, rice, and dried fruits can be prevented and controlled by placing them in controlled "cool" storage - 45° to 50°F., and/or refrigerator (or cooler) storage - 32° to 40°F.

If difficulty is encountered in determining the type and extent of rodent or insect infestation, consult the local health department, the county agriculture agent, and/or a reliable commercial exterminating representative.

Use of Traps and Poison

If a storeroom becomes infested with rodents; and traps are not effective in getting rid of them, it will be necessary to secure the services of a reputable bonded commercial exterminating company. Poisons are dangerous to use around food items and should be used only by experienced and trained exterminators or under their supervision.

Use of Sprays

To prevent and control insect infestation, commodity storerooms should be sprayed periodically with an approved insecticide (at least once a month in the summer or other periods when the temperature is above 70° F.). The spraying should include all empty pallets, trucks, walls, ceilings, floors, and pillars in the commodity storage area. Fogging machines which form minute droplets of insecticide dispersed as a fog are effective in the prevention and control of insects on surface areas.

Extermination and Fumigation

The most effective way of eliminating and controlling rodents and insects is by extermination and fumigation. No attempt will be made here to discuss the various fumigants and their use since there are many variable factors to be considered. Furthermore, changes are being made very rapidly in this field and present acceptable practices may be obsolete in a short time.

Fumigation should be done by or under supervision of a reputable licensed fumigating or exterminating company. Any contracts made with a fumigating or exterminating company should contain a statement to the effect that the contractor will comply with all Federal, State and local laws and regulations and that proper aeration of the building will be accomplished after fumigation.

The use of some fumigants (unless unusual precautions are taken) may result in an explosion or a fire, or may result in ill effects to workmen from exposure to the chemicals used. Therefore, a fumigating or exterminating company should be required to show evidence of public liability, property and fire insurance, and workman's compensation.

It is possible the first fumigation will not effect a 100% kill and may have to be followed with a second fumigation; therefore, a 100% guarantee kill should be included in the contract.

Salvage of Partially Out-of-Condition Commodities

It is often possible to salvage a large quantity of commodities when spoilage has not reached an advance stage of decomposition, infestation, or contamination. It may be necessary to lower temperatures to check the reactions that are causing spoilage. It may mean sorting the good commodities from the bad ones and using the good ones immediately. In other instances it may be necessary to reprocess the products; for example, flour may be rebolted, rice recleaned and rendered suitable for human use.

Commodities reclaimed by fumigation should not be issued for human consumption until a sampling of the commodities has been analyzed by and written approval has been received from the U.S. Food and Drug authorities acknowledging that the samples examined are fit for human consumption.

Disposal of Commodity Containers

For cleanliness, all used containers and sacks should be removed from the storeroom and disposed of. The containers should be used either in the redistribution or storage of commodities, or they may be sold and the proceeds applied to improving distribution facilities.

If either the distributing or recipient agencies sell commodity containers, they should be particularly careful not to interfere with the manufacture or sale of similar containers. Agencies selling containers must permit audits of their accounts to show that proceeds of sales were properly used.

Under terms of the agreements between distributing agencies, sponsoring or recipient agencies, and the USDA, containers become the responsibility of the distributing agency and will be disposed of in accordance with instructions prescribed by the distributing agency.

